

DOCA Profiles

Table of contents

MLNX_OFED to DOCA-OFED Transition Guide 8

The following document introduces the various supported DOCA-Host profiles.

Introduction

NVIDIA DOCA™ can be installed on the host and used by a variety of customers who have different workloads and requirements. The DOCA-Host package includes drivers, libraries, and tools to support NVIDIA® BlueField® networking platforms and NVIDIA® ConnectX® SmartNICs, Ethernet and InfiniBand, with both kernel and user-space components. Depending on their specific needs, customers may choose not to install the full DOCA-Host package on their host server but only the subset of components and tools relevant for their use case (whether to have a smaller installation size, lower integration/validation effort, etc).

To support the different use cases, DOCA includes DOCA-Host Installation Profiles, which are a subset of the full DOCA installation. DOCA-Host profiles are validated and tested installation packages. The following are the available DOCA profiles:

- doca-all
- doca-networking
- doca-ofed
- doca-roce

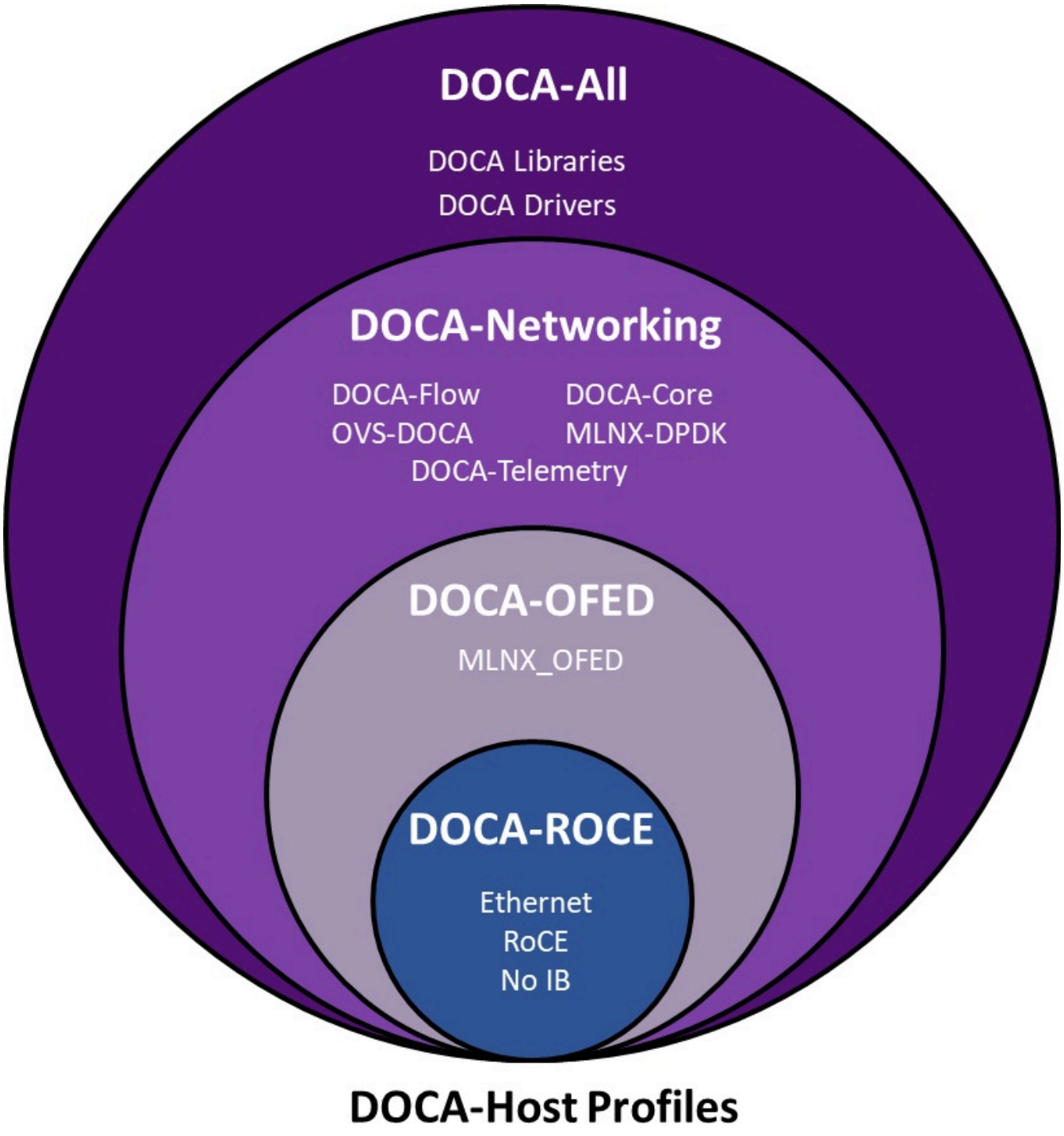
DOCA-Host supports the following NVIDIA devices:

- BlueField-3
- BlueField-2
- ConnectX-7
- ConnectX-6 DX
- ConnectX-6 LX
- ConnectX-6
- ConnectX-5
- ConnectX-4 LX

For hardware details on these devices, refer to the following pages:

- BlueField devices
- ConnectX devices

DOCA functionality is limited by the specific device capabilities.



doca-all

The full DOCA-Host installation is intended for users who wish to utilize the full extent of DOCA libs and drivers.

This profile is the super-set of components, which also includes the content of doca-ofed and doca-networking.

All DOCA libraries, drivers and tools are included in doca-all.

> **Info**
>
> When installing doca-all on host, BlueField Platforms can utilize all DOCA libs and drivers whereas ConnectX devices can utilize only doca-ofed and doca-networking subset of functions from within the super-set of doca-all, depending on the device's capabilities.

doca-networking

The doca-networking profile is intended for users who wish to benefit only from the networking functionality of DOCA.

The content of the doca-networking package is the following:

- MLNX_OFED
- DOCA Core
- MLNX-DPDK
- OVS-DOCA
- DOCA Flow

> **Info**

BlueField DPUs, BlueField SuperNICs, and ConnectX devices can utilize all included libs and drivers in the doca-networking profile, based on the device's capabilities.

doca-ofed

This profile is intended for users who wish to have the same user experience and content as MLNX_OFED but with DOCA package. doca-ofed installs the MLNX_OFED drivers and tools and does not include any other DOCA components.

The content of the doca-ofed package is:

- MLNX_OFED drivers and tools

Info

BlueField Platforms and ConnectX devices can utilize only the drivers in doca-ofed, based on the device's capabilities. No added DOCA libs are supported with any of the devices with doca-ofed profile installation.

doca-roce

The doca-roce (RDMA over Converged Ethernet) profile is intended for users who wish to benefit only from the Ethernet and RDMA functionality. doca-roce is a subset of doca-ofed.

The content for doca-roce package is:

- rdma-core
- ofed-scripts
- mlnx-tools
- mlnx-ofa_kernel

- libibverbs
- libibumad
- librdmacm
- perftest

> **Info**
>
> BlueField platforms and ConnectX devices can utilize the drivers in doca-roce. No added DOCA libs are supported with any of the devices with doca-roce profile installation.

DOCA Meta-packages

DOCA meta-packages are collections of several individual packages bundled together for convenience. Instead of executing multiple installation commands for each package, users can install a single meta-package that automatically installs all its included components.

This simplifies the process and ensures that all necessary packages are installed in one step. You have already seen some of DOCA's meta-packages in the profiles above.

Other meta-packages include:

- `doca-all-userspace` – Installs only the user-space packages from the `doca-all` bundle
- `doca-ofed-userspace` – Installs only the user-space packages from the `doca-ofed` bundle
- `doca-networking-userspace` – Installs only the user-space packages from the `doca-networking` bundle
- `doca-roce-userspace` – Installs only the user-space packages from the `doca-roce` bundle
- `doca-kernel` – Installs only the kernel components of DOCA

Which Profile to Install?

Selecting the right DOCA-Host installation profile is important to fully utilize the capabilities of your BlueField Platforms or ConnectX.

The functionality of DOCA-Host is limited by the device capabilities (e.g., ConnectX devices cannot utilize DOCA libs such as DPA, even if doca-all is installed on the host).

For BlueField devices:

- It is recommended to use doca-all
- If you require the smallest installation package for networking-only purposes, use doca-networking
- For MLNX_OFED-like installation, use doca-ofed (no additional DOCA functionality)
- For ROCE functionality only, install doca-roce

For ConnectX devices:

- It is recommended to use doca-networking
- For future-proof and mixed BlueField/ConnectX deployments, use doca-all
- For MLNX_OFED-like installation use doca-ofed (no additional DOCA functionality)
- For ROCE functionality only, install doca-roce

DOCA-Host Profile Installation

DOCA-Host can be installed on specific host OSs. Each of the Host Installation Profiles has specific OSs on which it can be installed as specified in section "Supported Host OS per DOCA-Host Installation Profile".

Follow the instructions under section " Installing Software on Host" in th e *DOCA-HOST Installation and Upgrade*.

Supported Host OS per DOCA-Host Installation Profile

Refer to the "General Support" page of the release notes for information.

MLNX_OFED to DOCA-OFED Transition Guide

This guide covers what users must know about the DOCA-Host unified software stack for NVIDIA networking products.

Introduction

MLNX_OFED is a software stack that provides kernel drivers, user space libraries, and management tools for NVIDIA networking products, including ConnectX and BlueField adapters. MLNX_OFED has been the standard software stack for NVIDIA networking products for many years, providing high performance, scalability, and compatibility with various operating systems and applications.

With the introduction of NVIDIA BlueField Networking Platform and DOCA as the software framework to support it, there are 2 host-server software packages dedicated for different devices.

DOCA-Host is the unified software package for your host-server, supporting both BlueField and ConnectX. Customers may choose to use the Inbox drivers of the operating system vendor. The drivers with the latest features are included as part of NVIDIA software packages, and specifically DOCA-OFED.

What is DOCA-Host?

DOCA-Host can be installed on the host-server and used by customers with different workloads and requirements. The DOCA-Host package includes drivers, libraries, and tools to support the NVIDIA® BlueField® networking platform (DPU or SuperNIC) and NVIDIA® ConnectX® SmartNIC, Ethernet and InfiniBand, with both kernel and user-space components. Depending on their needs, customers may choose not to install the full DOCA-Host package on their host server but only the subset of components and tools relevant for their use case.

To support the different use cases, DOCA includes DOCA-Host Installation Profiles, which are a subset of the full DOCA installation.

Info

DOCA-Host profiles are validated and tested installation packages.

The following are the available DOCA profiles:

- doca-all – intended for users who wish to utilize the full extent of DOCA libraries and drivers
- doca-networking – intended for users who wish to benefit only from the networking functionality of DOCA
- doca-ofed – intended for users who wish to have the same user experience and content as MLNX_OFED. Doca-ofed installs the MLNX_OFED drivers and tools and does not include any other DOCA components.

What is DOCA-OFED?

DOCA-OFED is an equivalent package of MLNX_OFED, providing the same functionality as MLNX_OFED and including the same kernel drivers, user space libraries, and management tools for NVIDIA networking products. DOCA-OFED supports the same OSs and applications as MLNX_OFED.

Why Switch to DOCA-OFED and DOCA-Host?

DOCA-OFED is a 1-to-1 substitute for MLNX_OFED. All customers using MLNX_OFED on their host-server should install DOCA-OFED instead.

Following the last release of MLNX_OFED, no new features will be added to MLNX_OFED. All new features will only be included as part of DOCA-OFED.

Switching to DOCA-OFED and DOCA-Host

Switching to DOCA-Host with any of the installation profiles, and specifically DOCA-OFED, is a straightforward process. You just need to follow these steps:

1. Download the latest DOCA-Host package from the NVIDIA website or public repo.
2. Uninstall the existing MLNX_OFED package from your system.

3. Install the DOCA-OFED package on your host server using standard Linux package manager.

4. Reboot your system and verify that the DOCA-OFED components are working properly.

Installation Example of DOCA-OFED from Online Repo

```
# echo "[doca]
name=DOCA Online Repo
baseurl=https://linux.mellanox.com/public/repo/doca/2.7.0/rhel9.4/x
enabled=1
# gpgcheck=0" > /etc/yum.repos.d/doca.repo
# sudo dnf clean all
# sudo dnf -y install doca-ofed
```

Installation Example of DOCA-OFED Offline Repo

```
# wget
https://www.mellanox.com/downloads/DOCA/DOCA_v2.7.0/host/doca-
host-2.7.0-209000_24.04_rhel94.x86_64.rpm
# sudo rpm -i doca-host-2.7.0-209000_24.04_rhel94.x86_64.rpm
# sudo dnf clean all
# sudo dnf -y install doca-ofed
```

MLNX_EN Transition

With the transition from MLNX_OFED, the MLNX_EN lite weight software package will also no longer be supported. Customers who wish to get the smaller package of drivers available via MLNX_EN thus far, are advised to use Inbox drivers, providing the same components.

DOCA-Host will also support a new installation profile, DOCA-RoCE, which is a subset of DOCA_OFED and includes only Ethernet and RoCE drivers, without IB specific components. So, customers can also use this profile which includes more content than MLNX_EN.

Transition Timeline

The transition timeline from MLNX_OFED to DOCA-OFED gives users enough time to switch to the new software stack. The timeline for the transition is as follows:

- October 2024 – The last standalone release of MLNX_OFED. Following this release, MLNX_OFED will no longer receive support for new features or enhancements.

  Tip

  Customers are encouraged to switch to DOCA-OFED as soon as possible to stay up-to-date on new features and enhancements for NVIDIA networking products.

- October 2024-October 2027 – The last standalone MLNX_OFED release will receive critical bug fixes and security updates for MLNX_OFED users as part of its long-term support (LTS) plan
- October 2027 – MLNX_OFED will no longer receive support or updates by NVIDIA (MLNX_OFED end of life)

  ⚠ **Warning**

  Users are strongly advised to switch to DOCA-OFED before this date, to avoid any compatibility or security issues.

Summary

DOCA-OFED is the new software stack for NVIDIA networking products, with the exact same user experience as MLNX_OFED. Users are encouraged to switch to DOCA-OFED as

soon as possible to enjoy the full potential of NVIDIA Networking products. Users can download the latest DOCA-OFED package from the NVIDIA website or directly from DOCA public repo, and follow the simple installation steps.

The last standalone release of MLNX_OFED will be October 2024. Afterwards, MLNX_OFED enters the LTS period and will only receive critical bug fixes and security updates for 3 years.

> ⚠ **Warning**
>
> In October 2027, MLNX_OFED will no longer be supported or updated by NVIDIA.

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